

2. On the Variability of Plumage exhibited by the Red Grouse (*Lagopus scoticus*). By T. E. BUCKLEY, B.A., F.Z.S.

[Received December 27, 1881.]

At the commencement of this paper I wish to remark that I do not propose to speak of what are commonly termed varieties, such as albinos, melanisms, &c., but of such variations in plumage as I think may be met with by any one in a season's grouse-shooting, only specifying that they should be obtained late enough in the season for the birds to have attained the highest perfection of plumage, which would be by November.

Although many authors have remarked on the variations of the plumage of the Red Grouse, it seems to have been generally supposed by them that these variations had reference to the locality or district inhabited by the birds. Thus Yarrell writes (Br. B. ed. 3, ii. p. 368):—"The Red Grouse of N. Wales are said to be large in size and light in colour; those of the Western Highlands are also light in colour, and are said to be earlier breeders than those of the eastern parts of Scotland, which are, however, of large size and dark in colour." Mr. Gray writes (B. West of Scotland, p. 234), in reference to examples from the Hebrides, that "they may be said to be smaller and lighter in colour than those from moors on the mainland, especially the mountain-ranges of the north-east of Scotland, which invariably yield, in good seasons, the largest and most beautifully marked Grouse. In many districts the native Grouse partake of the coloration of the ground in their markings: thus the finest and darkest birds are those frequenting rich heathy tracts; while on broken ground of a rocky character, such as may be seen in the south of Wigtonshire, the Grouse are either more or less mottled, or are altogether lighter in colour, and less in weight." The same gentleman adds in a note, on the information of Mr. Elwes, "that in the district of Gareloch, west of Ross-shire, Grouse vary very much in the breast-markings." Mr. Colquhoun, on the same subject writes ('The Moor and the Loch,' 3 ed. p. 112):—"The Perthshire Grouse are much smaller and darker in colour than those of Argyllshire. The West Highlander is a beautiful rich red and very large. . . . In the low corn-districts, such as Lanarkshire, Renfrewshire, and the Border counties, the Grouse are a light brown, borrowing a tint from the stubbles on which they delight to feed. . . . All these birds are so light in the colour as more nearly to resemble Partridges." Mr. Dresser (B. of Europe, vii. p. 166), after describing some specimens, makes this observation:—"The Grouse differ somewhat in colour according to locality. Judging from the series I have before me, I consider that those from Scotland are somewhat the larger, and considerably darker in colour. Those from the north of England are more rufous; and the Irish bird is considerably the lightest, and has a yellowish red tinge in the plumage; the feathers on the legs are also darker and

browner than in any of the other specimens. I have no specimens from Wales, where they are said to be small and very light-coloured."

Thus you will see by the authors I have quoted that all agree in the extreme variation in the plumage of the Red Grouse; but, then, all assign certain variations to certain localities and districts; and I wish to point out and illustrate by the series of specimens I exhibit that as great amount of variation may be found amongst Grouse obtained in a single locality as is mentioned by the authorities above quoted, and that hereby the observation of Thompson (B. Irel. ii. p. 47) is partly corroborated. He states:—"It has been remarked to me by sportsmen that the Grouse of Ireland and Scotland differ in size and colour. This is apparently correct when birds of a certain district are compared with those of another; but it is, in my opinion, a partial view of the subject, as in different localities throughout either the one country or the other birds will be found equally to vary in these respects. The following observations strikingly illustrate this opinion:—A friend who shot over the moor of Glenroy, Inverness-shire, in 1844, observed that the Grouse differed much in their plumage, and were of three varieties, each kind keeping particularly to its own quarters. On the darkest and most heathy ground were the darkest birds and the largest, weighing generally 2 lb. and sometimes 2 lb. 2 oz. On the rocky parts they were of a very much lighter brown, while on the stony and heathy ground combined they were of an intermediate brown, mottled more or less with white."

Now my own observations do not fully bear out the remarks of Thompson's friend; for I have not only killed dark birds on light-coloured ground, but, when the partially migratory habits of the Red Grouse are considered, it is scarcely possible to suppose that each individual would always pick out as its resting-place for the time being the particular piece of ground that suited its own plumage the best; for the birds are always drawing down from the higher to the lower ground as winter advances¹.

If we look at a large series of Grouse cocks (and unfortunately my series is not large enough to show this well, as each bird has been in most cases picked out as a representative of its own particular class of variation), we shall find that their backs show but little variation; and I think No. 3 as described below is a very good representative specimen. The hens here vary in a more marked degree, the generality being a good deal speckled with lighter tints of brown, as may be seen in No. 4; but of all the variations the true Red Grouse, in the locality whence the most of these specimens were obtained, is the rarest. Nos. 1 and 2 are a very good pair; they are old and barren.

A great part of the ground where these specimens were obtained has the heather much mixed with a certain grass which is called "deer's hair." This in the spring is quite yellow; and I fancy these

¹ It is obvious that once the ground is covered with snow the utility of variation is done away with, as then all Grouse look as black as Rooks.

yellow-speckled hens breed in this mixed grass and heather, while the more ordinarily marked ones, such as No. 8, breed in the heather alone; but later on in the season, when the coveys begin to break up, the birds no longer entirely inhabit the ground that suits their plumage best. And here I may remark on a habit of the Red Grouse that I have not seen noticed elsewhere, which is that as the season advances the sexes separate, the cocks going singly or in twos, or at the most threes, the hens in larger numbers, except a few pairs here and there, which I believe to be barren birds.

Every ornithologist who has tried it must have remarked how difficult it is to get specimens of Ptarmigan in any of their three distinct plumages, at least in the British Isles; and I find, though in a less degree, the same may be said of the Red Grouse, as in nearly all of the specimens exhibited traces of their summer or autumn plumage may be found, though most of them were obtained near the end of the season. I do not pretend to call the one exhibited a perfect series, as almost every Grouse varies more or less from its neighbour; and it would not be easy to get two birds resembling each other in every feather, as may be done in most other species.

Having made these prefatory remarks, I now proceed to describe in detail some of the birds in the series now exhibited, nearly all of which were obtained at or near Balnacoll in the valley of the Brora, East Sutherland, and, whether cocks or hens, had completed their full winter plumage as far as it can be.

No. 1. *Male*, Nov. 7, 1879.—Head and neck reddish brown, the back of each being marked by irregular bars of black relieved by others of yellowish brown. Back deep reddish brown, closely interlined by very small and irregular lines of black, these lines being much coarser near the centre of the back. Wing-coverts, rump, and upper tail-coverts the same, but the black lines still smaller; primaries slightly edged with white. Breast deeper in colour than the back, getting darker still towards the centre, the feathers being marked throughout by fine black lines, a few white feathers appearing between the legs.

No. 2. *Female*, Nov. 7, 1879.—This bird (which with the one last described made a barren pair) resembles No. 1 in most particulars; the back has fewer black bars in it, but more dark spots; and the upper tail-coverts are more marked with black bars and spots. The breast is decidedly lighter in colour, and has the dark bars more regular; a few of the under tail-coverts are tipped with white.

This pair are good examples of the typical form of Red Grouse, one of the least common on the moor where they were procured.

No. 3. *Male*, Oct. 31, 1879.—Head and back of neck dark brown, relieved with lighter spots and black bars. Back reddish brown, with small black bars, each feather having a black patch; greater wing-coverts the same, but with fewer black patches; one or two of the lesser wing-coverts have a tip of white; upper tail-coverts dark brown with black bars, a few of these tipped with white. Throat deep chestnut-brown; breast deep reddish brown with decided bars

of black, a deeper colour in the centre, where also some white feathers appear; under tail-coverts a good deal tipped with white; primaries very faintly edged with white.

The back of this bird may be taken as typical of the male Red Grouse.

No. 4. *Female*, Oct. 21, 1879.—Head and neck brown, with black spots. Back and greater wing-coverts brown with black bars, many of the feathers having a black spot; primaries much marked with white on the outside; secondaries very dark brown, minutely marbled with light brown; upper tail-coverts a rich brown, barred and spotted with black; tail black, with a slight marking of brown on the outer edge of the outer feathers. Breast and throat yellowish brown, the upper part of the former much barred with black, the lower part much darker, many of the feathers having an edging of white below the black line; the sides again lighter and more coarsely marked; under tail-coverts same as sides.

No. 5. *Male*, Nov. 22, 1879.—Head deep reddish brown with black bars and markings, the sides of the head being mottled with white. Back black, relieved by a few bars of dark and light brown; greater wing-coverts deep dusky brown, marked by shadings of a rather lighter brown; smaller wing-coverts edged with white; primaries slightly edged with the same; upper tail-coverts deep brown, barred with black, a few feathers having a white edging. Chin much marked with white; throat deep reddish brown; the top of the breast has a circle of nearly black feathers; the centre nearly white with a few black feathers, going away at the sides into deep reddish brown much marked with black and white; under tail-coverts same as sides.

This is a very well marked specimen of a pretty common variation; I have one almost identical from Skye.

No. 6. *Female*, Oct. 31, 1879.—Back of neck and head dark brown with black bars and spots; sides of neck chestnut-red, some of the feathers tipped slightly with white. Back deep brown, with bars of black; some of the feathers have a black spot, and others are edged with a lighter brown; greater wing-coverts the same as the back but without the black spots, many of the feathers edged with white; lesser wing-coverts also much edged with white; upper tail-coverts reddish brown with black bars, a few feathers edged with white. Feathers of chin edged with white; upper part of breast rich dark brown, barred with black, the edging of white on each feather increasing towards the centre of the breast, where the brown nearly disappears, the colouring there being black and white; the sides have the bars of white and black on the ground-colour more distinct; under tail-coverts the same as the sides. Outsides of the primaries edged with white. The tail marked and tipped with brown.

This bird when fresh killed had a most beautiful purple gloss over its breast. I have killed this same variation in Ross-shire, but I have not found it a very common one.

No. 7. *Male*, Nov. 22, 1879.—Back of head and neck very deep reddish brown, with black bars and spots, also spots of a lighter

colour. Back very black, the feathers edged and barred with dark brown, greater wing-coverts black, with here and there slight brown markings; upper tail-coverts very dark brown with lighter brown marks, shading to nearly pure black at the tail. Chin black, throat very deep reddish brown; breast black, some of the feathers slightly edged with brown, which turns to white at the centre of the breast, the sides showing more decided brown markings; under tail-coverts same as sides, but the markings more distinct still.

This bird approaches to a melanism; but as I have often come across specimens closely resembling it, I have described it as a type of one of the variations.

No. 8. *Female*, Dec. 3, 1879.—Back of head and neck light brown, marked with black bars and spots. Back, greater and lesser wing-coverts, and tail-coverts light brown marked with black bars, some of the feathers having black spots; the tips of many of the feathers again have a very light brown spot, giving it a very mottled appearance. Outer edges of primaries slightly marked with white. The whole of the breast, sides, and under tail-coverts light brown, shading to darker brown in the centre, each feather having one or more black bars—the feathers in the centre and sides also being edged with white, as are also the under tail-coverts.

This and No. 4 most nearly resemble each other, the latter being probably the older bird.

Now I think it will be admitted that the specimens I exhibit should not be, as I maintained before, regarded as “varieties” in the vague and ordinary sense of that word. It seems to me that we should regard them as instances of individual differences or polymorphisms—just as in the case of the Ruff (*Machetes pugnax*), which exhibits a degree of variability in its seasonal adornment more conspicuous, I allow, than that of the Grouse now before us, but far less permanent, since the difference in the Grouse would appear to remain, if not throughout the year, for at least several months, while that in the Ruff is confined to but a few weeks in the spring or early summer. Thus, if my contention be just, we have in the Red Grouse—the only species of birds according to the opinion of most ornithologists which is peculiar to the British Islands, and a species which in the judgment of the best authorities is itself the modified descendant of a far more widely distributed species, the Willow-Grouse (*Lycopus albus*)—an amount of individual variability capable of still further and perhaps indefinite modification as to colour, should occasion arise whereby such modification might be rendered necessary for the persistence of the stock.